

HONORABLE MICHELLE L. PETERSON

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

WILD FISH CONSERVANCY,

Plaintiff,

v.

BARRY THOM, in his official capacity as
Regional Administrator for the National
Marine Fisheries Service, *et al.*,

Defendants,

and

ALASKA TROLLERS ASSOCIATION,

Defendant-Intervenor.

Case No. 2:20-cv-00417-RAJ-MLP

SECOND DECLARATION OF
GORDON LUIKART, Ph.D.

I, Gordon Luikart, declare the following to which I am competent to testify under penalty
of perjury of the laws of the United States:

1. I previously prepared a declaration that was dated February 24, 2021, and
submitted in this matter on May 5, 2021—Declaration of Gordon Luikart, Ph.D., Dkt. No. 91-5
("First Luikart Declaration"). The First Luikart Declaration described my professional
qualifications and the work that I had performed and the opinions that I had developed in this
matter up to that point. I do not repeat those efforts here, but instead incorporation them with this

SECOND LUIKART DECLARATION - 6
Case No. 2:20-cv-00417-RAJ-MLP

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1 reference.

2 2. In preparing this Second Luikart Declaration, I have considered the following
3 additional materials not addressed in the First Luikart Declaration:

4 a. Declaration of Allyson Purcell, National Marine Fisheries Service, West Coast
5 Region, and exhibits thereto, Dkt. No. 93-3 (“Purcell Declaration”);

6 3. Having reviewed the Purcell Declaration and the exhibits thereto, my opinions
7 expressed in the First Luikart Declaration remain unchanged. I find nothing in the Purcell
8 Declaration that leads me to revise the analysis and conclusions of the First Luikart Declaration.

9 4. Ms. Purcell asserts that my calculation of potential increases of pHOS levels in
10 Chinook salmon populations of the lower Columbia River ESU listed as threatened under the
11 ESA “has a major flaw ... because he assumes all of the adult fish returning to the Columbia
12 River basin as a result of the prey increase program will return to a small number of tributaries
13 on the Washington side of the Lower Columbia River.” This is not correct. I did not assume all
14 the fish return to a few tributaries on the Washington side of the Lower Columbia River. Even if
15 only a small number return to the Lower Columbia River, it will increase pHOS above the
16 already unacceptably high levels.

17 5. Ms. Purcell mischaracterizes my analysis of the likely increase in pHOS levels in
18 the Lower Columbia River. First, I believe it is important to note that my analysis had to be very
19 general due to the lack of specific detail in NMFS’s 2019 SEAK Biological Opinion in regard to
20 the following: the number of adult hatchery fish that NMFS expects will be produced by the prey
21 increase program for Puget Sound, the Washington Coast, and the Lower Columbia River; the
22 expected harvest that might occur on those adults under the provisions of the 2019 Pacific
23 Salmon Treaty; how many of the adult Chinook salmon produced by the prey increase program
24 are expected to escape both harvest and predation by Southern Resident killer whales and return
25 to the rivers in the vicinity of the locations from which the smolts were released; and, how many
26 of these additional returning adult hatchery Chinook salmon end up straying onto natural
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1 spawning grounds, thereby further increasing pHOS levels above their current levels. An
 2 additional shortcoming in the data relevant to hatchery stray rates available from federal (NMFS
 3 and USFWS) and state (Washington and Oregon Departments of Fish and Wildlife, WDFW, and
 4 ODFW, respectively) agencies is the absence of data with which to estimate the numbers and
 5 proportions of returning adult Chinook salmon from specific hatchery programs that stray to
 6 specific tributaries where they contribute to pHOS levels. This requires sampling of fish on the
 7 spawning grounds to acquire tissue samples for DNA analysis and/or to recover PIT or coded-
 8 wire tags (CWTs). Rather, pHOS levels, such as those reported in WDFW's Score database from
 9 which the data in Table 1 of the First Luikart Declaration were obtained, are obtained from
 10 visual identification of Chinook hatchery adults with missing adipose fins. Consequently, there is
 11 little if any available data regarding which hatchery populations stray into which tributaries,
 12 thereby contributing to pHOS levels in those tributaries. The analyses I undertook to provide the
 13 estimates of the additional risk to Chinook salmon populations in the Lower Columbia River and
 14 other ESUs had, therefore, to be made at a more general level.

16 6. In order to provide a credible estimate of the risk that the straying of such fish
 17 likely pose to Chinook populations already experiencing significantly high levels of pHOS (see,
 18 Table 1 in the First Luikart Declaration, Dkt. No. 91-5) I was required to make conservative
 19 assumptions to estimate the number of stray adults from the prey release program that might
 20 result from the increased Chinook hatchery smolt releases. *See id.* at ¶ 58–62. For the Lower
 21 Columbia River, I conservatively estimated that up to 15,000 adult hatchery Chinook from the
 22 Columbia River prey increase programs may stray into tributaries of the Lower Columbia River.
 23 Ms. Purcell challenges neither those assumptions nor the numbers of potential strays to the
 24 Lower Columbia River that I estimate. Rather, she opines that my alleged estimates overestimate
 25 “future pHOS in Washington’s Lower Columbia River Chinook populations and overestimate
 26 the genetic risk to the Lower Columbia River Chinook Evolutionarily Significant Unit as a
 27 whole” Purcell Declaration, ¶ 18.

7. The assertion that I overestimate the potential increase in pHOS levels is incorrect and misleading. I did not attempt to provide estimates of any increases in pHOS levels of any specific tributary population. Rather in Table 1 of the First Luikart Declaration, I noted the current very high levels of pHOS in Lower and Mid-Columbia river tributaries, including several “primary” populations considered essential to the recovery of the Chinook ESUs to which they belong. I merely noted that the straying of **any number** of the estimated 15,000 additional stray adult hatchery Chinook salmon from the prey increase program would likely be biologically significant and pose an additional threat to the survival and recovery of any or all of these populations. Even a total of 100 to 1,000 stray adults from the prey increase programs straying into several of the Washington State tributary populations listed in Table 1 of the First Luikart Declaration would significantly increase some or most of the currently too-high pHOS levels in these tributaries due to their currently low population sizes. For example, among the affected Washington State tributary populations in the Lower Columbia River are three small populations classified as “primary populations”: Abernathy, Germany, and Mill creeks. These range in mean total adult spawners in the majority of years since 2010 of 147 (Abernathy Creek) to 719 (Mill Creek), of which 129 to 313 are hatchery fish, resulting in average pHOS levels of 44% (Mill Creek), 88% (Abernathy Creek), and 89% (Germany Creek). (First Luikart Declaration Table 1). The pHOS of 44% in Mill Creek is dangerously high and continuation of this level with no increase from additional hatchery smolt releases poses a continuous biological threat to the survival of this population. The situation in Abernathy and Germany creeks is worse. Straying of an additional 10 hatchery Chinook from the prey increase program in the Lower Columbia into each of these populations would increase pHOS to 95% (Abernathy), 93% (Germany), and 45% (Mill). The recent pHOS levels in these three populations and those in most of the other populations in the Lower Columbia River ESU listed in Table 1 of the First Luikart Declaration are already dangerously high from a conservation genetics perspective, for the several reasons described in the First Luikart Declaration. Hence, *any* further increase in any of these pHOS

1 levels further increases the threat to the survival and recovery of these populations, and the ESU
2 as a whole.

3 8. These pHOS levels in the Columbia River tributaries are required by the Mitchell
4 Act BiOp to be reduced significantly. *See* AR 13267–72, 13666, 13677. However, the prey
5 increase program for Southern Resident killer whales will very **likely increase pHOS** in many of
6 the threatened populations of ESA-listed Chinook salmon.

7 9. It is correct that I focused my discussion of pHOS in Lower Columbia tributaries
8 on pHOS data from Washington State, as these constitute the majority of rivers and streams in
9 the Lower Columbia River with Chinook populations, the pHOS data were readily available
10 from WDFW’s public website, and these data for Washington tributaries were sufficient to
11 illustrate the credibility of the threat posed to the Lower Columbia River Chinook salmon ESU
12 from straying from the hatchery smolt increases proposed.

13 10. Estimating the genetic and associated ecological threats to tributary populations in
14 the ESA-listed ESUs that will be affected by the proposed hatchery smolt increases is
15 compromised by NMFS’ failure to provide quantitative data on the number of adult Chinook
16 salmon that NMFS expects to be produced from the additional 20 million hatchery Chinook
17 salmon, how many numbers represent the 4% to 5% prey increase postulated to be made
18 available to Southern Residents, how many are likely to escape harvest and predation and stray
19 into tributary populations, and what NMFS estimates the impact on those ESA-listed tributary
20 populations is likely to be. The Purcell Declaration provides no such quantitative estimates, only
21 unsupported assertions that no increases will be allowed that would pose genetic risks to ESA-
22 listed salmon. *See* Purcell Declaration. ¶¶ 19, 21. It would have been helpful had Ms. Purcell
23 provided data showing estimates of potential additional straying and associated genetic and
24 ecological impacts on tributary populations in the Chinook salmon ESUs that are predicted from
25 the prey increase program. It is clear that straying from the additional hatchery smolt releases are
26 likely to increase pHOS and negatively impact several or many ESA-listed tributary populations
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(e.g., Table 1 of the First Luikart Declaration).

CONCLUSION

11. In conclusion, the Purcell Declaration mischaracterizes the analyses in the First Luikart Declaration and provides no data, quantitative analyses, or other relevant information that causes me to alter in any way the details or conclusions of the First Luikart Declaration. I reaffirm the analyses and conclusions therein with respect to the risk to Chinook populations in the Lower Columbia River ESU (or in Washington Coast and Puget Sound Chinook populations) posed by additional straying of hatchery Chinook from the prey increase program. That program will likely increase the already unacceptably high pHOS and thereby harm threatened populations of ESA-listed Puget Sound Chinook.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

DATED this 8th day of June, 2021.



Gordon Luikart, Ph.D.